

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1. (Currently Amended) A polarizing device for a permanent magnet rotor comprising:

a polarizing iron core arranged facing to a specified number of magnetizable members of permanent magnets among a plurality of ~~unmagnetized permanent magnets~~ magnetizable members arranged at specified intervals in the circumferential direction on a peripheral surface of a rotor;

a first coil wound at a position of the polarizing iron core facing to a ~~desired~~ one of the magnetizable members ~~permanent magnets of the polarizing iron core~~;

a pair of second coils each of which is arranged ~~having~~ at a specified interval from ~~on the basis of~~ the first coil in the circumferential direction on the polarizing iron core and whose direction of flow of current is different from that of the first coil; and

a power source for supplying the current to the first and second coils;

wherein one of the ~~permanent magnet and~~ first coil and the magnetizable members is ~~relatively moved~~ movable relative to the other and each of the ~~permanent magnets~~

magnetizable members is magnetized to form a magnetic pole in turn by the current fed from the power source.

2. (Currently Amended) The polarizing device for a permanent magnet rotor according to claim 1, wherein the second coils are arranged having an interval corresponding to at least three ~~permanent magnets with the second~~ magnetizable members relative to the first coil, respectively.

3. (Original) The polarizing device for a permanent magnet rotor according to claim 1, wherein the second coils are wound in the direction different from that of the first coil.

4. (Original) The polarizing device for a permanent magnet rotor according to claim 3, wherein the second coils are wound by a number of windings of half the number of windings of the first coil or less.

5. (Currently Amended) The polarizing device for a permanent magnet rotor according to claim 1, wherein a notch part for expanding the clearance with the ~~permanent magnet~~ magnetizable members is formed near both sides of the first coil of the polarizing iron core.

6. (Currently Amended) The polarizing device for a permanent magnet rotor according to claim 1, wherein the ~~permanent magnet is relatively~~ magnetizable members are moved relative to the first coil by rotating the rotor.

7. (New) A polarizing device for a permanent magnet rotor, comprising:  
a polarizing member configured to face a specified number of magnetizable regions arranged at a circumferential surface of a rotor, the rotor having a total number of said magnetizable regions arranged at the circumferential surface of the rotor, the specified number of magnetizable regions being less than the total number of magnetizable regions;  
a first coil wound around a first portion of the polarizing member at a first position configured to face a first one of the magnetizable regions of the rotor;  
a second coil wound around a second portion of the polarizing member at a second position configured to face a second one of the magnetizable regions of the rotor, wherein a direction of current flow in the second coil is different from that of the first coil;  
a third coil wound around a third portion of the polarizing member at a third position configured to face a third one of the magnetizable regions of the rotor, wherein a direction of current flow in the third coil is different from that of the first coil; and  
a power source for supplying the current to the first, second and third coils,  
wherein the polarizing member is configured to magnetize the first one of the magnetizable regions at the first position by providing current from the power source,

wherein the polarizing device is configured to provide relative motion between the rotor and the polarizing member and wherein the polarizing member is configured to magnetize each of the magnetizable regions in succession at the first position corresponding to the first coil using current from the power source, and

wherein the second and third coils are disposed apart from the first coil by a distance such that intervening ones of the magnetizable regions to be magnetized are disposed between the first and second coils and between the first and third coils.

8. (New) The polarizing device for a permanent magnet rotor according to claim 7, wherein the second and third coils are spaced apart from the first coil such that two intervening magnetizable regions are disposed between the first and second coils and such that two intervening magnetizable regions are disposed between the first and third coils.

9. (New) The polarizing device for a permanent magnet rotor according to claim 7, wherein the second and third coils are wound in a direction opposite from that of the first coil.

10. (New) The polarizing device for a permanent magnet rotor according to claim 9, wherein a number of windings of each of the second and third coils is less than or equal to half the number of windings of the first coil.

11. (New) The polarizing device for a permanent magnet rotor according to claim 7, wherein a notch portion is provided in the polarizing member at each of two sides of the first coil, each notch portion providing a space between the polarizing member and the circumferential surface of the rotor.

12. (New) The polarizing device for a permanent magnet rotor according to claim 7, wherein the rotor is moved relative to the polarizing member by rotating the rotor.

**AMENDMENTS TO THE DRAWINGS:**

The attached sheet of drawings includes changes to Fig. 5. This sheet, which includes Fig. 5, replaces the original sheet including Fig. 5. In Fig. 5, the legend "CONVENTIONAL" has been added to address the objection set forth in the July 16, 2003 Office Action.

Attachments: Replacement Sheet  
Annotated Sheet Showing Changes

**REMARKS**

Claims 1-12 are currently pending. Claims 1, 2, 5 and 6 have been amended. New claims 7-12 have been added. Figure 5 has also been amended.

At the outset, Applicants note that the Office did not return an examiner-initialed copy of the PTO-1449 form submitted with the second Information Disclosure Statement (IDS) filed on July 1, 2003. It is respectfully requested that an examiner-initialed copy of said PTO-1449 form be provided to Applicants. Copies of the July 1, 2003 IDS and PTO-1449 form are being submitted herewith for the Examiner's convenience, along with a copy of the postcard date-stamped by the Office acknowledging receipt of the same.

The Office Action includes a rejection of claims 1-6 under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. Claim 1 has been amended in a manner that addresses aspects of the Office's rejection and to enhance readability. The language "permanent magnets" and "demagnetized permanent magnets" has been replaced with "magnetizable members". The language "desired" has been deleted. Lines 7 and 8 have been amended to reflect that the first coil is wound at a position of the polarizing iron core and that the first coil faces one of the magnetizable members; it is believed that further specification of the locations of the magnetizable members is unnecessary. Lines 15-18 have been amended to reflect that the first coil is movable relative to the magnetizable members, or that the magnetizable members are movable relative the first coil, such that each of the magnetizable members is magnetized to form a magnetic pole (e.g., N or S) in turn (e.g., one after another). With regard to other aspects of the Office's rejection, the

language "at specified intervals in the circumferential direction on a peripheral surface of a rotor" is believed to be amply clear. Examples are illustrated in Figures 1, 3 and 4 wherein magnetizable members 11 (e.g., 11a, 11b, 11c, 11d) are arranged on a peripheral surface of rotor 12 at specified intervals along a circumference of the rotor 12, the rotor 12 being next to the polarizing iron core 13 having coils 15 and 16 thereon. Of course, the claims are not intended to be limited to the examples of Figures 1, 3 and 4. In addition, the rotor recited in line 6 is also the rotor recited in line 1 in the sense that when magnetizable members have been magnetized, the rotor can be considered a permanent magnet rotor. Claims 2, 5 and 6 have been amended for consistency with claim 1. The changes to claims 1, 2, 5 and 6 are not intended to narrow the scopes of the affected claim elements. Withdrawal of the rejection is respectfully requested.

The Office Action also includes a rejection of claims 1-6 under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Soeda et al. patent (U.S. Patent No. 5,200,729) in view of the Tsukasa publication (JP 09-163692). This rejection is respectfully traversed.

Claim 1 recites a polarizing device for a permanent magnet rotor. The polarizing device comprises a polarizing iron core arranged facing to a specified number of magnetizable members of a plurality of magnetizable members arranged at specified intervals in the circumferential direction on a peripheral surface of a rotor. The polarizing device also comprises a first coil wound at a position of the polarizing iron core facing to one of the magnetizable members, and a pair of second coils, each of which is arranged at a specified interval from the first coil in the circumferential direction on the polarizing iron



core and whose direction of flow of current is different from that of the first coil. The polarizing also comprises a power source for supplying the current to the first and second coils. One of the first coil and the magnetizable members is movable relative to the other, and each of the magnetizable members is magnetized to form a magnetic pole in turn by the current fed from the power source.

The Office alleges that the Soeda et al. patent discloses all the features recited in claim 1 except for the alleged permanent magnet portions being discrete permanent magnets. The Office relies on the Tsukasa publication for allegedly disclosing discrete magnet sections and suggests that one of ordinary skill in the art would have been motivated to replace the permanent magnet portions of Soeda et al. device with discrete permanent magnet sections allegedly disclosed in Tsukasa publication for the purpose of providing selective magnetization.

Applicants respectfully submit that the Office's rejection does not make out a *prima facie* case of obviousness. First, Applicants respectfully submit that the Tsukasa publication does not disclose a rotor having discrete magnet sections as alleged by the Office. Rather, Figure 3 of the Tsukasa publication discloses that the rotator 1 has a permanent magnet 2. Applicants see no disclosure in the Tsukasa publication that the permanent magnet 2 of rotator 1 comprises discrete magnet sections. Accordingly, even if the two references were combined as suggested by the Office the resulting hypothetical device would not render claim 1 obvious at least because the hypothetical device would not comprise a polarizing iron core arranged to face a specified number of magnetizable

members of a plurality of magnetizable members arranged at specified intervals in the circumferential direction on a peripheral surface of a rotor as recited in claim 1.

In addition, even if, *arguendo*, the Tsukasa publication did disclose a rotator having discrete magnet sections, one of ordinary skill in the art would not have been motivated to make the modification suggested by the Office at least because the Soeda et al. patent expressly teaches away from doing so. The Soeda et al. patent discloses that reference number 30 therein is a single piece of magnetic material (see, e.g., column 4, lines 37-38). At column 1, line 58 through column 2, line 34, the Soeda et al. patent discloses that prior art devices have been made with a plurality of permanent magnet pieces separated from each other and that such devices suffer from problems including difficulties in fixing the work, increased cost, and reduced magnetic force (column 2, lines 22-29), deterioration of adhesion portions by aging, and loosening/failure by vibration (column 2, lines 29-33). The Soeda et al. patent further expressly states that it is an object of the device disclosed therein to overcome such difficulties (column 2, lines 36-54) by providing a permanent magnet constituted by a single piece of magnetic material (column 2, lines 55-60). Accordingly, the Soeda et al. patent expressly teaches away from the Office's suggested modification of providing multiple discrete magnet sections, and one of ordinary skill in the art would not have been motivated to make the Office's suggested modification for at least this reason.

Moreover, there is no disclosure in the Soeda et al. patent of a first coil or magnetizable members being movable relative to each other wherein each of the

magnetizable members is magnetized to form a magnetic pole in turn (i.e., one after another) by current from a power source as recited in claim 1. Rather, as reflected in Figures 9a and 9b of the Soeda et al. patent, each of the projection portions 20a, 20b, 20c and 20d is configured with the coil 22 such that all the magnetic regions of the piece of magnetic material 30 are polarized simultaneously, not in turn as recited in claim 1. Accordingly, even if the Office's suggested modification were made, *arguendo*, the resulting hypothetical device would not render claim 1 obvious for at least this additional reason.

For at least these reasons, Applicants respectfully submit that claim 1 is patentable over the applied references. Withdrawal of the rejection and allowance of claim 1 are respectfully requested. Claims 2-6 are allowable at least by virtue of dependency, and allowance of claims 2-6 is respectfully requested. Moreover, neither of the applied references discloses a configuration wherein second coils are arranged having an interval corresponding to at least three magnetizable members relative to the first coil as recited in claim 2. Claim 2 is further allowable at least for this additional reason.

Claims 7-12 have been added herein to round out the scope of protection being sought. Claim 7 recites a polarizing device for a permanent magnet rotor. The polarizing device comprises a polarizing member configured to face a specified number of magnetizable regions arranged at a circumferential surface of a rotor, the rotor having a total number of said magnetizable regions arranged at the circumferential surface of the rotor, the specified number of magnetizable regions being less than the total number of

magnetizable regions. The polarizing device further comprises a first coil wound around a first portion of the polarizing member at a first position configured to face a first one of the magnetizable regions of the rotor, a second coil wound around a second portion of the polarizing member at a second position configured to face a second one of the magnetizable regions of the rotor, wherein a direction of current flow in the second coil is different from that of the first coil, and a third coil wound around a third portion of the polarizing member at a third position configured to face a third one of the magnetizable regions of the rotor, wherein a direction of current flow in the third coil is different from that of the first coil. The polarizing device also comprises a power source for supplying the current to the first, second and third coils. The polarizing member is configured to magnetize the first one of the magnetizable regions at the first position by providing current from the power source, wherein the polarizing device is configured to provide relative motion between the rotor and the polarizing member, and wherein the polarizing member is configured to magnetize each of the magnetizable regions in succession at the first position using current provided from the power source, and wherein the second and third coils are disposed apart from the first coil by distances such that intervening ones of the magnetizable regions to be magnetized are disposed between the first and second coils and between the first and third coils.

It is respectfully submitted that neither the Soeda et al. patent nor the Tsukasa publication disclose the combination of features recited in claim 7. Accordingly, claim 7 is

allowable over these references for at least this reason. Claims 8-12 are allowable at least by virtue of dependency. Allowance of claims 7-12 is respectfully requested.

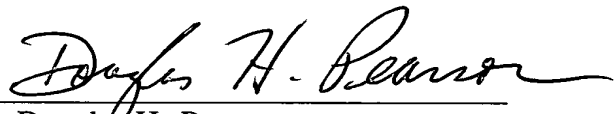
In light of the foregoing, withdrawal of the objection and rejections of record are respectfully requested so that the present application may pass to issuance. Should there be any questions in connection with this application, the Office is respectfully requested to contact the undersigned at the number below.

Respectfully submitted,

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Date: October 16, 2003

By: \_\_\_\_\_



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FIG.5

CONVENTIONAL

